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COMPLETE SPECIFICATION.

Improvements in or relating to Devices for Towing Motor Vehicles having Independently Suspended Front Wheels.

We, MANN EGERTON & COMPANY LIMITED, a Company incorporated under the laws of Great Britain, of 5 Prince of Wales Road, Norwich, England, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement :

This invention relates to devices for towing motor vehicles having independently suspended front and/or rear wheels.

Since the introduction, for example, of independently suspended front wheels on motor vehicles established methods of towing such vehicles have become difficult owing to the changed structure of the front suspension mountings, i.e. the complete disappearance of the beam axle.

It is accordingly the main object of the present invention to provide a device of an efficient character for the towing of vehicles fitted with independent front and/or rear wheel suspension, wherein possibility of damage to the vehicle being towed is eliminated.

According to the invention a device for towing motor vehicles having independently suspended front and/or rear wheels comprises a towing tube or bar jointed at one end and having an eye at said jointed end for attachment to a towing vehicle, a universal joint at the opposite end of said tube or bar, a fitting for application to a desired point of a vehicle to be towed, and means in association with the said universal joint for detachably connecting the said fitting to the said towing tube or bar.

The means on the universal joint adapted to receive the said fittings may comprise lugs which are made to be integral with the said universal joint. The universal joint is preferably spring loaded to smooth out loads upon starting.

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In one embodiment of the invention the said fitting may comprise means for connection to the front chassis cross member of a motor vehicle to be towed.

In such embodiment the fitting may comprise a plate member having accurately spaced dowels in the upper face thereof for engagement with corresponding holes on the underside of the front chassis cross member of the vehicle to be towed, cranked strap members pivotably mounted on the upper face of said plate to engage with the upper face of said front chassis cross member and thus to maintain the said dowels in engagement with the said holes, means for maintaining the strap members in position against the upper face of the front chassis cross member, and means for detachably connecting said plate member to said universal joint.

The means for maintaining the strap members in position against the upper face of the front chassis cross member may comprise an arcuate slot in each strap member extending from the outer edge thereof and co-operating with a thumb-screw mounted on the said plate member, each strap member being capable of being pivoted outwardly from a retracted position with its slot in engagement with the respective thumb-screw and of being locked by the thumb-screw in the desired position.

In an alternative embodiment of the invention which is adapted for use in conjunction with the square box jacking points provided on certain makes of motor vehicles with independent wheel suspension and normally situated directly under the front and rear bumper bars the said fitting may comprise means for connection to the square box jacking points of a motor vehicle to be towed.

In such embodiment the fitting may comprise a plate member, two radius arms

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pivoted to the said plate member, means for varying the spacing between the said two arms and for securing said arms in desired spaced relation to one another, engaging members located at the free ends of said arms for introduction into the sockets of square box jacking points on a vehicle to be towed, and means for detachably connecting said plate member to said universal joint.

The means for varying the spacing between the two radius arms and for securing the said arms in the desired spaced relation to one another may comprise a telescopic tube and locking means, such as a clamp, for locking the tube in the desired position of extension.

The engaging members may comprise projections pivoted to the ends of the radius arms and furnished at the extreme end with a beard engaging behind the socket of a jacking point and held in such position of engagement by a flat spring secured to the side of the projection directed away from the said beard.

In order that the invention may be more clearly understood some preferred embodiments thereof will now be described, by way of example, with reference to the accompanying drawings, in which:—

Fig. 1 is a view of the towing tube or bar;

Fig. 2 is a plan view of a fitting for attachment to the front chassis cross member of a motor vehicle; and

Fig. 3 an elevational view of Fig. 1.

Fig. 4 is a plan view of an embodiment of a fitting for use with square box jacking points on a motor vehicle; and

Fig. 5 shows to enlarged scale an elevational view of a detail of Fig. 4.

Referring to Fig. 1, the towing device comprises a tube or bar 1 which is jointed at one end, as at 2, and has an eye 3 at the jointed end for attachment to a towing vehicle. At the opposite end the tube or bar 1 is furnished with a universal joint 4, which is spring loaded as at 4a to smooth out loads upon starting, and integrally with the universal joint there are provided lugs 5 representing the point of attachment to the towing tube or bar of an alternative fitting or fittings for direct connection to the desired point of a vehicle to be towed, the exact nature of the fitting or fittings depending on the part of the vehicle to which the towing device is to be connected.

Thus, for example, the fitting illustrated in Figs. 2 and 3 is designed for attachment to the front chassis cross member (not shown) of a motor vehicle fitted with independent front wheel suspension. This fitting comprises a flat plate member 6, which is suitably lightened or may consist of a suitably machined casting. Carried by the plate and picking up with holes of corresponding centres on the underside of the front chassis

cross member of the vehicle are located accurately spaced dowels 7, these dowels being of sufficient size to provide the necessary strength for the purpose of attachment.

On the upper face of the plate 6 there are pivotally mounted at positions 9 near the edge of the plate serving for connection to the towing tube or bar 1, and laterally of such point, strap members 8, which are cranked as at 10, 11 (Fig. 3), so that when the strap members are located in the position shown in Fig. 2 they will just engage over the upper face of the front chassis cross member in resting engagement therewith when the dowels 7 are located in the holes provided in the lower face of such member.

In the outer edge of each strap member 8, towards the pivoted end thereof, there is provided an arcuate slot 12 adapted to co-operate with a thumbscrew 13 mounted on the upper face of the plate 6. The two strap members are thus capable of being pivoted outwardly from a retracted position with their respective slots 12 in engagement with the thumbscrews 13, and by means of the latter they can be locked in the desired position, for example, that illustrated in Fig. 2.

In the rear edge of the plate 6 there are provided two small holes 14 arranged to register with corresponding holes 15 in the lugs 5 on the towing tube or bar 1, whereby the plate can be readily and rapidly connected with and detached from the lugs on the tube or bar by means of bolts passed through the respective holes and secured by nuts.

The operation of this device is as follows:—

When a casualty vehicle having independently suspended front wheels is to be towed away to a repair shop or service station, the towing tube or bar 1 is hitched on to a towing vehicle by means of the eye 3. The dowels 7 on the plate 6 of the attachment fitting are introduced into the respective holes in the underside of the front chassis cross member of the vehicle to be towed, and the strap member 8 are pivoted outwardly from a retracted position until the lower faces thereof are in bearing engagement with the upper face of the front chassis cross members, whereupon the strap members are locked in position by means of the thumbscrew 13 and thus prevent the dowels 7 from again leaving the holes in the underside of the cross member. Finally the holes 14 are brought into register with the corresponding holes 15 in the lugs on the tube or bar 1, and the attachment can thus be readily connected up with the towing bar by passing bolts through the respective holes 14 and 15 and securing them by nuts. Naturally, other means may also be employed for readily and rapidly connecting the plate of the attachment fitting with the towing tube or bar.

The embodiment of attachment fitting

illustrated in Figs. 4 and 5 is designed to co-operate with motor vehicles having square box jacking points such as are provided on some makes of vehicles, the jacking points being normally situated directly under the front and rear bumper bars. In this embodiment the plate 6 possesses as before holes 14 arranged to register with the holes 15 in the lugs 5. In this case, however, the plate 6 may be smaller than in the previous embodiment and of a plain rectangular form, and to the two corners opposite the attachment edge for connection with the lugs 5 there are pivoted as at 16 radius arms 17 of any suitable cross section, for example of tubular form. Approximately midway of the length of the arms 17 the latter are united by a telescopic bar 18 which is pivotally connected to the arms 17 as at 19. The bar 18 determines the spacing of the arms 17, and by the use of a clamp 20 it can be locked in position when the arms 17 are in the desired spaced relation to one another, i.e. when the free ends of the arms 17 are located opposite the jacking points of the vehicle to be towed.

At the free end of each of the said arms there is provided with double pivotal connection 21, 22 an engagement member 23 comprising a projection 24 furnished at the extreme end with a beard 24 arranged to engage behind the socket of the respective jacking point.

On the side of the projection 24 directed away from the beard 25 there is provided a flat spring 26. When the projection 24 is introduced into the socket of a jacking point it hooks with the beard 25 behind the socket and is maintained in such hooked engagement by the spring 26. Excessive penetration of the projection into the socket is prevented by a pin 27, which thrusts against the front face of the jacking point on either side of the socket.

It will be understood that with the device as described above towing can be effected in either the forward or the rearward direction of the vehicle being towed.

What we claim is:—

1. A device for towing motor vehicles having independently suspended front and/or rear wheels, comprising a towing tube or bar jointed at one end and having an eye at said jointed end for attachment to a towing vehicle, a universal joint at the opposite end of said tube or bar, a fitting for application to a desired point of a vehicle to be towed, and means in association with the said universal joint for detachably connecting the said fitting to the said towing tube or bar.

2. A device according to Claim 1, in which the means on the universal joint adapted to receive the said fittings comprise lugs which are made to be integral with the said universal joint.

3. A device according to Claim 1 or Claim

2, in which the universal joint is spring loaded to smooth out loads upon starting.

4. A device according to any of Claims 1 to 3, in which the said fitting comprises means for connection to the front chassis cross member of a motor vehicle to be towed.

5. A device according to Claim 4, in which the said fitting comprises a plate member having accurately spaced dowels in the upper face thereof for engagement with corresponding holes on the underside of the front chassis cross member of the vehicle to be towed, cranked strap members pivotably mounted on the upper face of said plate to engage with the upper face of said front chassis cross member and thus to maintain the said dowels in engagement with the said holes, means for maintaining the strap members in position against the upper face of the front chassis cross member, and means for detachably connecting said plate member to said universal joint.

6. A device according to Claim 5, in which the means for maintaining the strap members in position against the upper face of the front chassis cross member comprise an arcuate slot in each strap member extending from the outer edge thereof and co-operating with a thumbscrew mounted on the said plate member, each strap member being capable of being pivoted outwardly from a retracted position with its slot in engagement with the respective thumbscrew and of being locked by the thumbscrew in the desired position.

7. A device according to any of Claims 1 to 3, in which the said fitting comprises means for connection to the square box jacking points of a motor vehicle to be towed.

8. A device according to Claim 7, in which the fitting comprises a plate member, two radius arms pivoted to the said plate member, means for varying the spacing between the said two arms and for securing said arms in desired spaced relation to one another, engaging members located at the free ends of said arms for introduction into the sockets of square box jacking points on a vehicle to be towed, and means for detachably connecting said plate member to said universal joint.

9. A device according to Claim 8, in which the means for varying the spacing between the two radius arms and for securing the said arms in the desired spaced relation to one another comprise a telescopic tube and locking means, such as a clamp, for locking the tube in the desired position of extension.

10. A device according to Claim 8 or Claim 9, in which the engaging members comprise projections pivoted to the ends of the radius arms and furnished at the extreme end with a beard engaging behind the socket of a jacking point and held in such position of engagement by a flat spring secured to the

side of the projection directed away from the said beard.

11. A device for towing motor vehicles having independently suspended front and/or rear wheels, substantially as hereinbefore described with reference to the accompanying drawings.

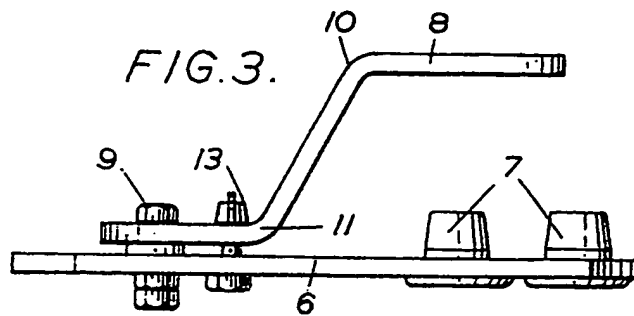
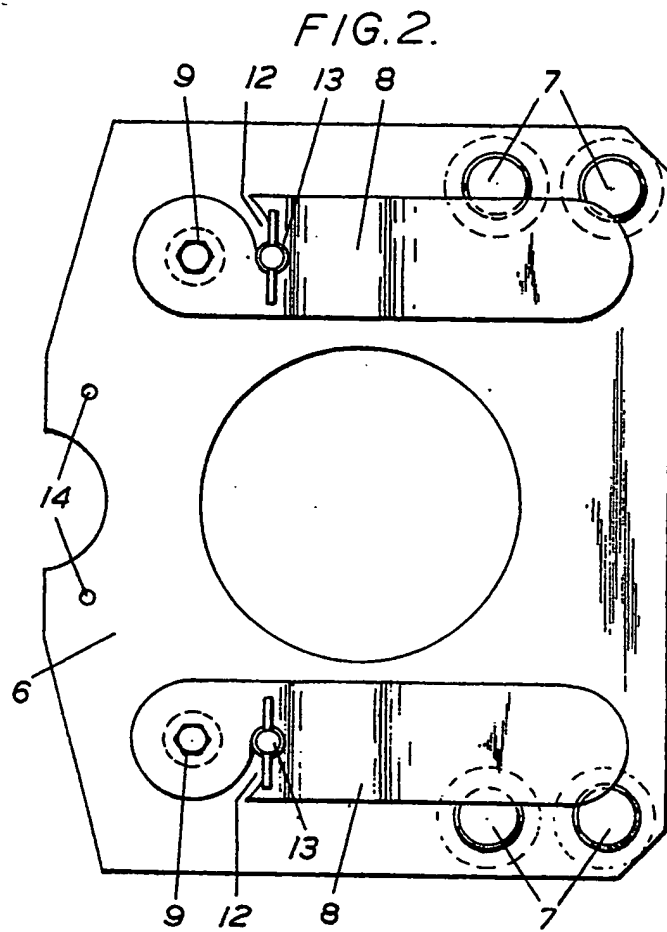
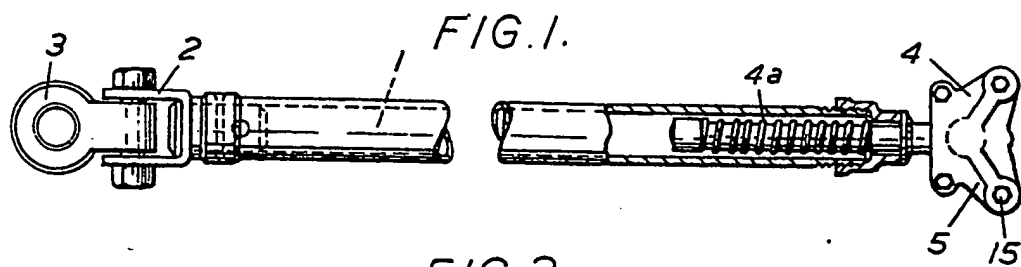
12. In or for a device for towing motor vehicles having independently suspended front and/or rear wheels, a fitting for attachment to the desired point of a vehicle to be towed and adapted for detachable connection

to the towing means of the device, substantially as hereinbefore described with reference to Figs. 1, 2 and 3 or Figs. 1, 4 and 5 of the accompanying drawings. 15

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2 SHEETS

This drawing is a reproduction of
the Original on a reduced scale.

SHEETS 1 & 2



FIG. 4.

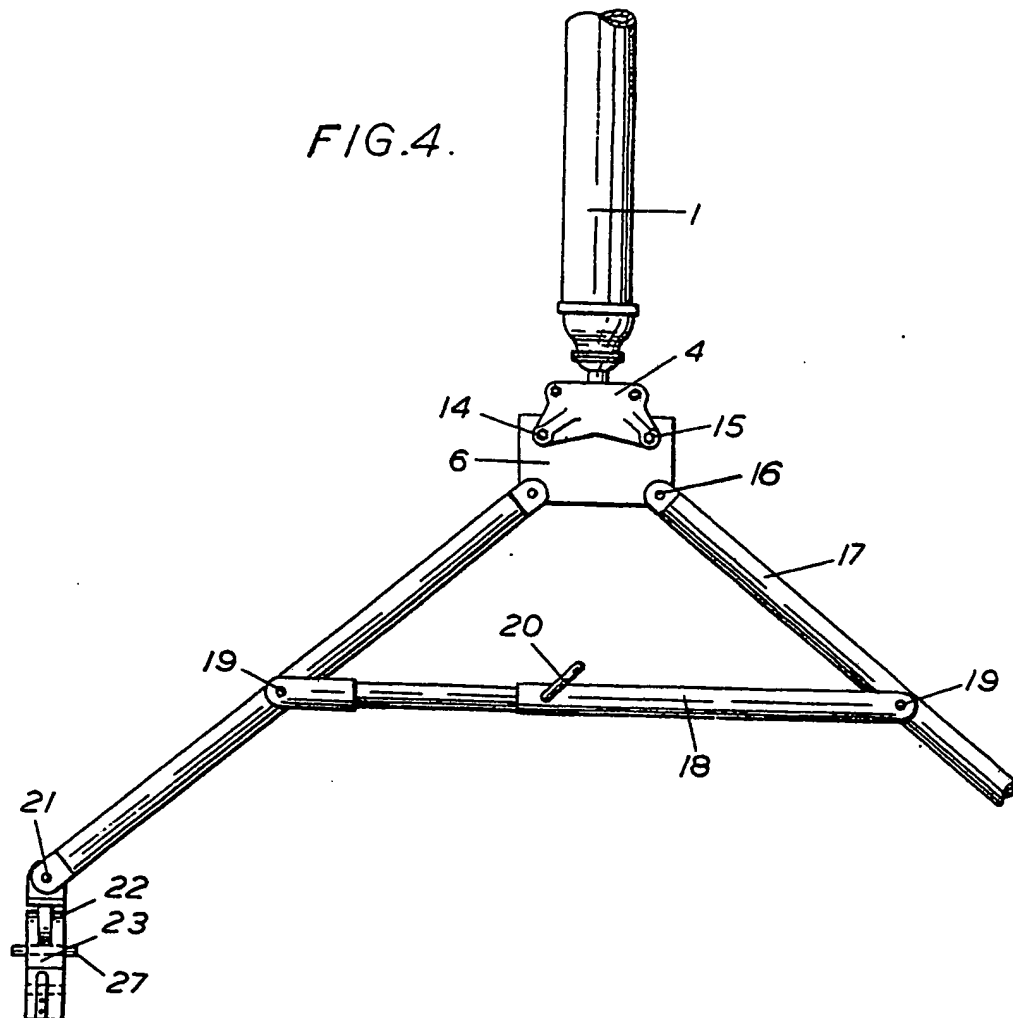


FIG. 5.

